Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of forming a semiconductor device with increased thermal conductivity, comprising:

forming a cavity having a length, width and thickness in a body of a sapphire substrate having relatively low thermal conductivity by ablating the body with a laser, the body having a thickness, a bottom surface and a top surface, the cavity opening onto at least the bottom surface;

substantially filling the cavity with at least one material having a greater thermal conductivity than the body; and

forming a semiconductor structure over the top surface and over the cavity,

wherein at least one of the length and width of the cavity is substantially equal to or greater than the corresponding length and width of the semiconductor structure to provide a heat path for transporting heat away from the semiconductor structure that increases the thermal conductivity of the semiconductor device.

2-3. (Canceled)

4. (Original) The method of claim 1, wherein forming the cavity comprises ablating the body with an Nd:YAG laser.

5. (Original) The method of claim 1, wherein forming the cavity comprises ablating the body with a laser having a spot size of at least about 20 μm.

6. (Original) The method of claim 1, wherein forming the semiconductor comprises forming a GaN semiconductor structure.

7. (Original) The method of claim 1 wherein at least partially filling the cavity comprises at least partially filling the cavity with at least one of a seed layer, Au, Ag or Cu.

8. (Original) The method of claim 1, wherein at least partially filling the cavity comprises:

forming a seed layer on at least a portion of the inner surface of the cavity; and

forming an additional at least one material layer in the cavity over the seed layers.

9. (Previously Presented) The method of claim 8, wherein forming an additional at least one material layer comprises plating the additional at least one material onto the seed layer.

10. (Original) The method of claim 1, wherein at least partially filling the cavity comprises at least partially filling the cavity with a metal paste.

11. (Original) The method of claim 1, wherein forming the semiconductor occurs after forming the cavity.

12. (Canceled)

13. (Currently Amended) The method of claim 11, wherein:

~~the body has a thickness; and~~

forming the cavity comprises forming the cavity to a depth that is less than the thickness of the body so that the cavity opens onto the bottom surface without opening onto the top surface.

14. (Currently Amended) The method of claim ~~13~~, 1, wherein forming the cavity comprises forming at least a first portion having a first depth that is less than the thickness of the body and a second portion within the body having a second depth that is ~~less than~~equal to

the thickness of the body~~, but~~ and greater than the first depth, the ~~second~~first portion having at least one of a width and a length that is greater than the ~~first~~second portion.

15. (Original) The method of claim 1, wherein forming the semiconductor occurs prior to forming the cavity.

16. (Currently Amended) The method of claim 15, wherein:

~~the body has a thickness;~~

_____forming the cavity comprises forming the cavity to a depth that is equal to the thickness of the body so that the cavity opens onto the bottom surface and the top surface;

at least partially filling the cavity comprises at least partially filling the cavity so that the at least one material contacts the semiconductor.

17. (Previously Presented) The method of claim 15, wherein:

forming the cavity comprises forming at least a first portion having a first depth that is less than the thickness of the body and a second portion within the body having a second depth that is equal to the thickness of the body, so that the cavity opens onto the bottom surface and the top surface, the second portion having at least one of a width and a length that is greater than the first portion; and

at least partially filling the cavity comprises at least partially filling the cavity so that the at least one material contacts the semiconductor.

18. (Previously Presented) The method of claim 1, wherein the semiconductor structure includes at least one p-contact.

19. (Previously Presented) The method of claim 18, wherein the length of the cavity is aligned with the at least one p-contact.

20. (Previously Presented) The method of claim 1, wherein the cavity is filled to maximize thermal conductivity and structural rigidity of the semiconductor device.

21. (Previously Presented) The method of claim 1, wherein forming the cavity comprises ablating the body with a laser having a wavelength of about 1 μm.

22. (Currently Amended) A method of forming a semiconductor device with increased thermal conductivity, comprising:

forming a cavity in a body of a sapphire substrate having relatively low thermal conductivity, the body having a thickness, a bottom surface and a top surface, the cavity opening onto the bottom surface, wherein forming the cavity comprises ablating the body with a laser;

substantially filling the cavity with at least one material having a greater thermal conductivity than the body; and

forming a heat generating semiconductor structure over the top surface,

wherein the cavity is formed to a depth that is less than the thickness of the body so that the cavity opens onto the bottom surface without opening onto the top surface, the cavity forming a heat path that transports heat from the semiconductor structure away from the substrate.

23. (New) The method of claim 1, wherein the body thickness is at least about 100 μm.